



C-CAST

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Project Background

- **Controller's – Communication and Situational Awareness Terminal (C-CAST)**
- **Advanced Surface Movement Guidance and Control System (A-SMGCS)**
- **NASA Runway Incursion Prevention System (RIPS)**
- **FAA Runway Incursion Reduction Program (RIRP)**



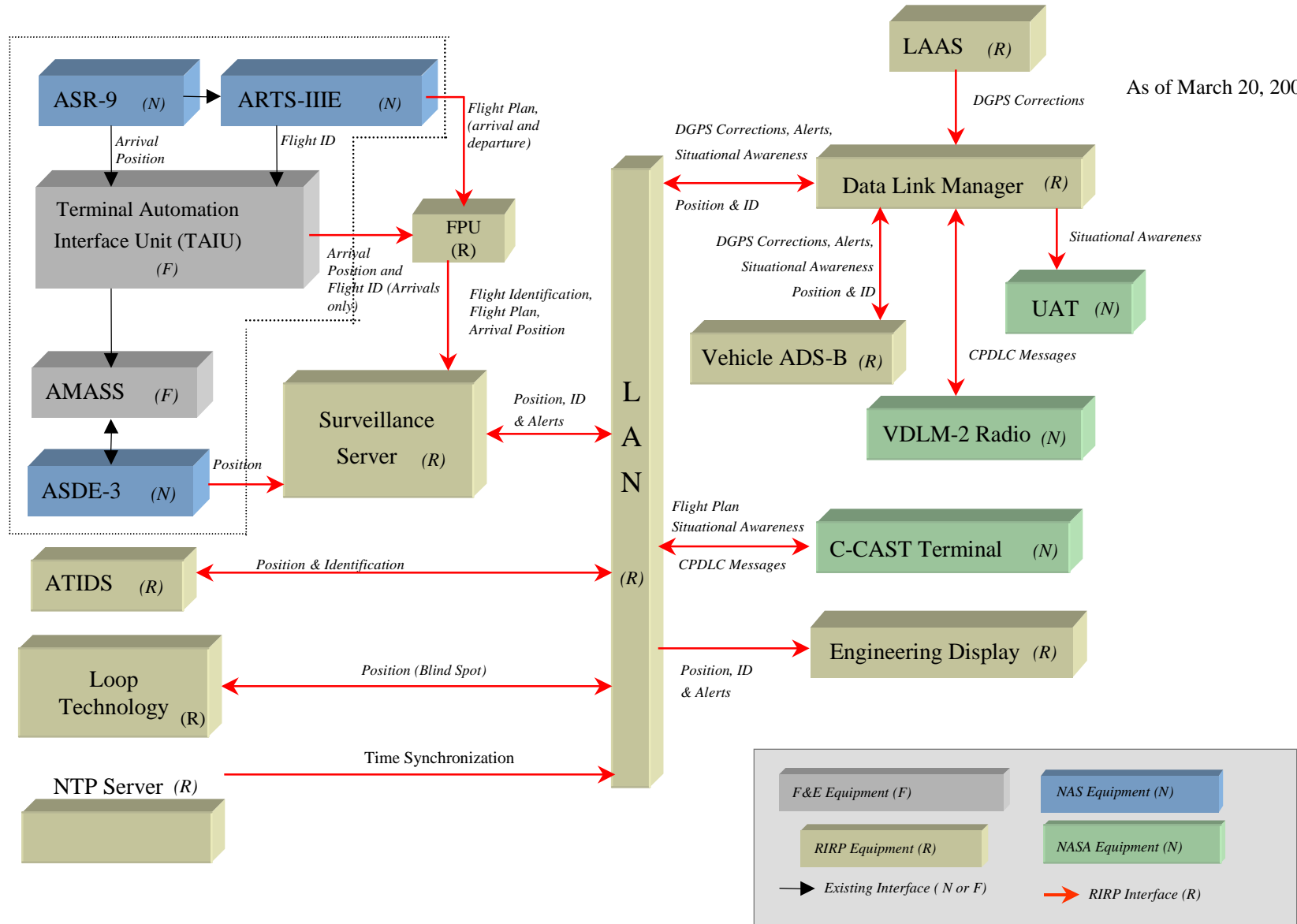
Background Continued

- **Lernout & Hauspie ASR1602**
- **Using VDL Mode 2 and TCP/IP**
- **CPDLC – ICAO and DO-219**
- **Selected messages – ATN SARPS and DO-219**
- **NTP server for ground synchronization**
 - » **Data analysis**



RIPS Ground Architecture

As of March 20, 2000



Progress

- **Unlimited aircraft call signs**
 - » All possible aircraft companies
 - » All possible numeric combinations
- **Increase recognizer accuracy**
 - » Speaker independent
- **Tested at DFW**
 - » Surveillance Server
 - » Data Link Manager (DLM)
 - » Airborne Data Link Manager (ADLM)
 - » Network Time Protocol (NTP)



Progress Continued

- **Map features**
 - » **Zoom capabilities – St. Cloud State**
 - » **Runway incursion warning bars**
 - » **Gate to Gate operations**
- **Flight strip features**
 - » **One flight strip view with 3 messages**
 - » **Multiple flight strip option**
 - » **Can establish comm link without surface radar**
 - » **Runway incursion warning messages**
- **Manual features**
 - » **Color coded buttons**
 - » **Manual option**



Attention Areas

- **Voice changes due to illness or foreign dialect**
 - » Re-training requirements
 - » Multiple voice files
- **Improper grammar**
 - » Limit non-standard phraseology
 - » Create very robust grammar file
- **Voice verification mode**
 - » Pop-up window
- **Varying terminology**
 - » Ramps vs. Gates and Spots

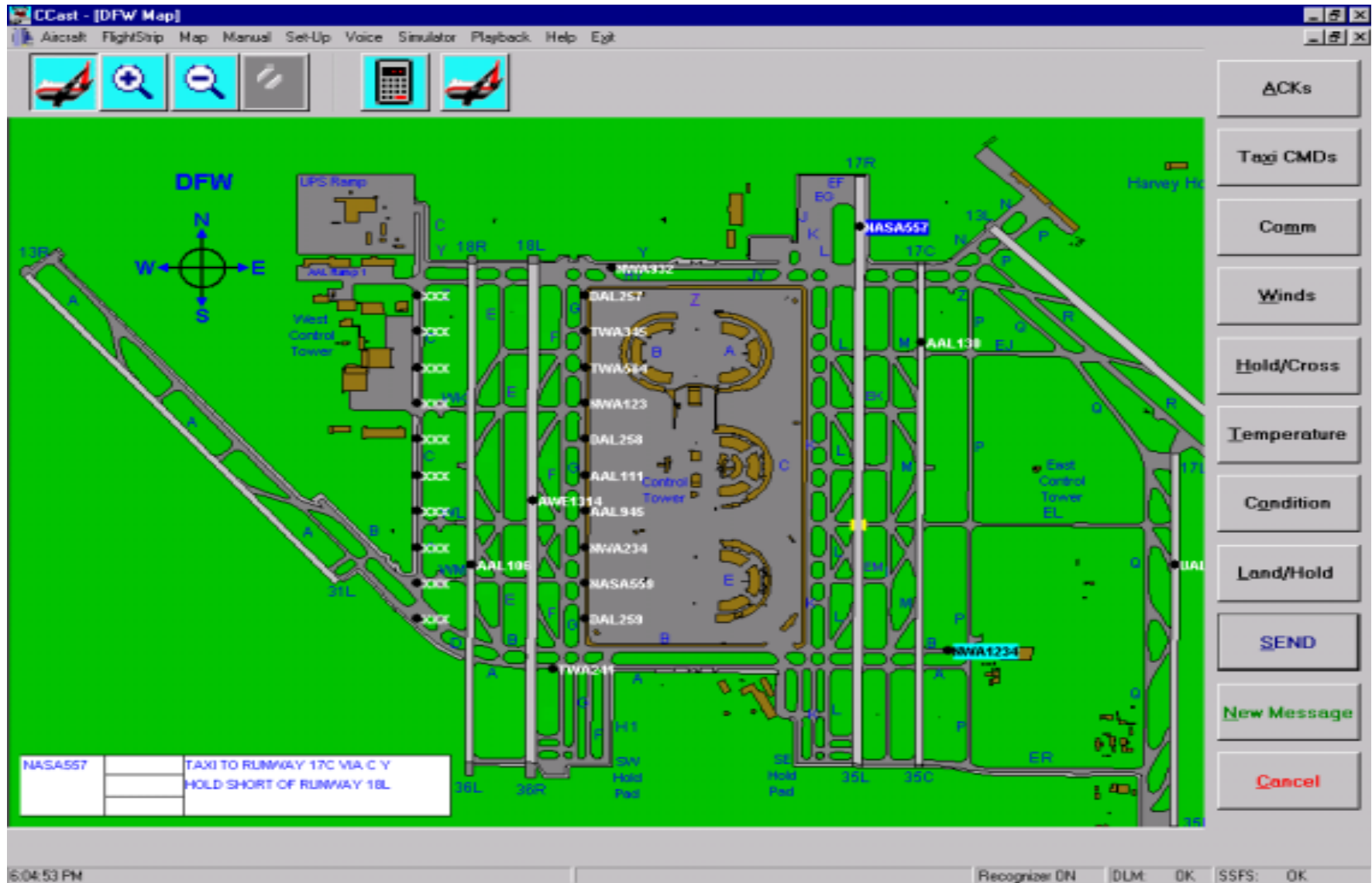


Attention Areas Continued

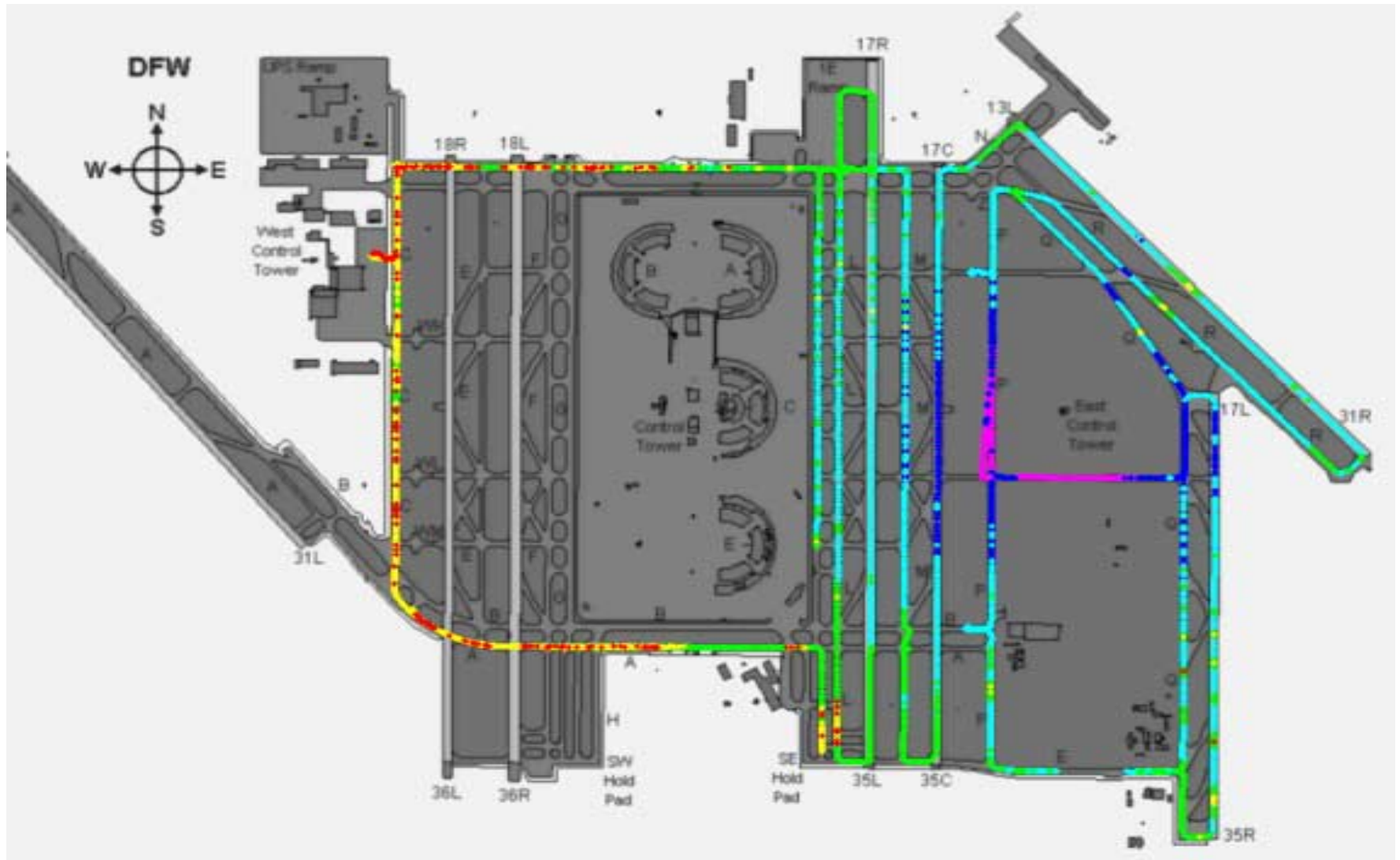
- **Unlimited ACIDS**
 - » Does not effect recognizer accuracy
- **New recognition software**
 - » Requires faster processing
 - » Interface with application – St. Cloud University
- **Compound statements**
 - » Ability is present but never used in ICAO



C-CAST Terminal



Coverage Map



RIPS Cockpit



Virtual Heads Up Display - HUD



“Runway Conflict”



HUD Guidance



Electronic Moving Map



Recent Events

- **August 2000**
 - » **NASA Langley Research Center**
 - **Communication equipment tests**
 - **CPDLC message decoding tests**
 - » **Dallas Fort Worth International Airport**
 - **Coverage tests**
 - **LAAN connection tests**
- **October 2000**
 - » **Data collection**
 - **Flight tests**
 - » **VIP demonstrations**



Future Goals

- **Conduct data analysis**

